

IN THE CLAIMS

The status of each claim in the present application is listed below.

Claims 1-25: (Canceled).

26. (New) A lubricating oil additive comprising a reaction product of a boron-containing succinimide compound and a phospho sulfurized hydrocarbon compound.

27. (New) The lubricating oil additive of Claim 26, wherein the phospho sulfurized hydrocarbon compound has a structure in which two alkyl groups are bonded to a phosphorous atom.

28. (New) The lubricating oil additive of Claim 26, wherein the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and a phosphorous sulfide.

29. (New) The lubricating oil additive of Claim 28, wherein the olefin is propylene, butylene, isobutylene, decene, cetene, octadecene, a terpene, vinylnorbornene or camphene.

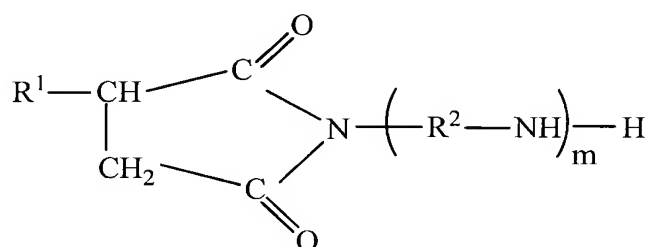
30. (New) The lubricating oil additive of Claim 28, wherein the olefin is α -pinene.

31. (New) The lubricating oil additive of Claim 28, wherein the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

32. (New) The lubricating oil additive of Claim 28, wherein the olefin is α -pinene and the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

33. (New) The lubricating oil additive of Claim 26, wherein the boron-containing succinimide compound is obtained by reacting a boron-free succinimide compound with a boron-containing compound.

34. (New) The lubricating oil additive of Claim 33, wherein the boron-free succinimide compound is represented by the formula (I):



wherein

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

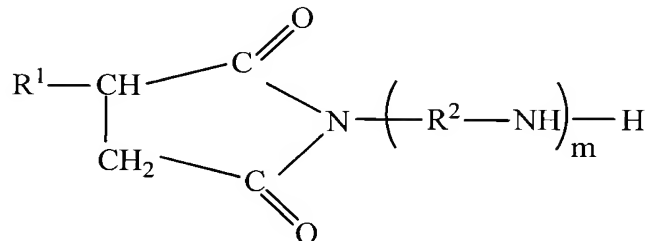
m is an integer of 1 to 10.

35. (New) The lubricating oil additive of Claim 33, wherein boron-containing compound is a boron oxide, a boron halide, boric acid, boric anhydride or a borate ester.

36. (New) The lubricating oil additive of Claim 26, wherein
the boron-containing succinimide compound is obtained by reacting a boron-free succinimide compound with a boron-containing compound,
the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and a phosphorous sulfide,
the olefin is a terpene, and

the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

37. (New) The lubricating oil additive of Claim 36, wherein the terpene is α -pinene and the boron-containing compound is boron-containing succinimide compound represented by the formula (I):



wherein

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

38. (New) The lubricating oil additive of Claim 26, wherein the reaction product of a boron-containing succinimide compound and a phospho sulfurized hydrocarbon compound is obtained by reacting the boron-containing succinimide compound and the phospho sulfurized hydrocarbon compound at a temperature of about 100°C to about 300°C.

39. (New) A lubricating oil composition comprising a mineral oil and/or a synthetic base oil and the lubricating oil additive of Claim 26.

40. (New) The lubricating oil composition of Claim 39, which comprises 0.01 to 50 % by mass of the lubricating oil additive.

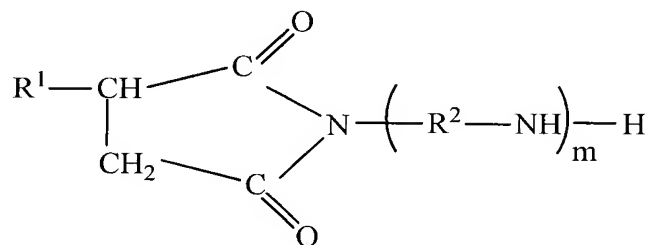
41. (New) The lubricating oil composition of Claim 39, wherein the base oil has a kinematic viscosity at 100°C is 1 to 30 mm²/s.

42. (New) A lubricating oil composition of Claim 39, wherein the base oil has a %C_A of 20 % or less.

43. (New) The lubricating oil additive consisting essentially of a reaction product of a succinimide compound and a phospho sulfurized hydrocarbon compound.

44. (New) The lubricating oil comp additive of Claim 43, wherein the succinimide compound is boron-free.

45. (New) The lubricating oil additive of Claim 44, wherein the boron-free succinimide compound is represented by the formula (I):



wherein

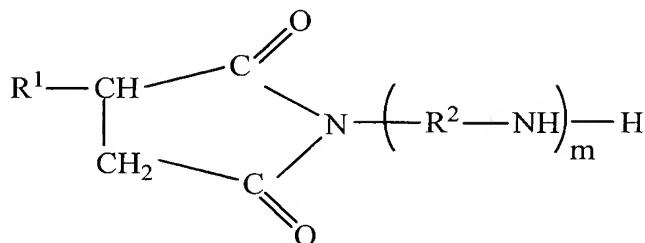
R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

46. (New) The lubricating oil additive of Claim 43, wherein the succinimide compound contains boron.

47. (New) The lubricating oil additive of Claim 46, wherein the succinimide compound is represented by the formula (I):



which contains boron,

wherein

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

48. (New) The lubricating oil additive of Claim 43, wherein the phospho sulfurized hydrocarbon compound has a structure in which two alkyl groups are bonded to a phosphorous atom.

49. (New) The lubricating oil additive of Claim 43, wherein the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and a phosphorous sulfide.

50. (New) The lubricating oil additive of Claim 49, wherein the olefin is propylene, butylene, isobutylene, decene, cetene, octadecene, a terpene, vinylnorbornene or camphene.

51. (New) The lubricating oil additive of Claim 49, wherein the olefin is α -pinene.

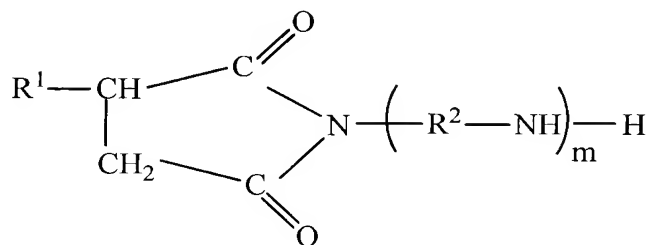
52. (New) The lubricating oil additive of Claim 49, wherein the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

53. (New) The lubricating oil additive of Claim 49, wherein the olefin is α -pinene and the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

54. (New) The lubricating oil additive of Claim 46, wherein the boron-containing succinimide compound is obtained by reacting a boron-free succinimide compound with a boron-containing compound.

55. (New) The lubricating oil additive of Claim 46, wherein
the boron-containing succinimide compound is obtained by reacting a boron-free succinimide compound with a boron-containing compound,
the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and a phosphorous sulfide,
the olefin is a terpene, and
the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

56. (New) The lubricating oil additive of Claim 55, wherein the olefin is α -pinene and the succinimide compound is a succinimide compound represented by the formula (I):



which contains boron,

wherein

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

57. (New) The lubricating oil additive of Claim 43, wherein the reaction product of a succinimide compound and a phospho sulfurized hydrocarbon compound is obtained by reacting the succinimide compound and the phospho sulfurized hydrocarbon compound at a temperature of about 100°C to about 300°C.

58. (New) A lubricating oil composition comprising a mineral oil and/or a synthetic base oil and the lubricating oil additive of Claim 47.

59. (New) The lubricating oil composition of Claim 58, which comprises 0.01 to 50 % by mass of the lubricating oil additive.

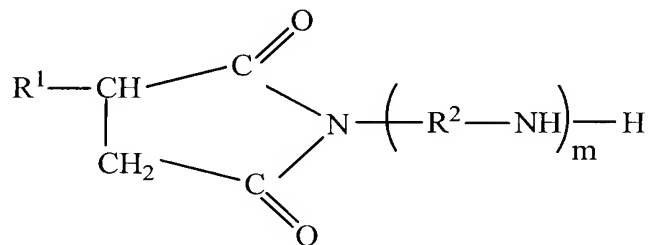
60. (New) The lubricating oil composition of Claim 58, wherein the base oil has a kinematic viscosity at 100°C is 1 to 30 mm²/s.

61. (New) The lubricating oil composition of Claim 58, wherein the base oil has a %C_A of 20 % or less.

62. (New) A lubricating oil additive consisting of a reaction product of a succinimide compound and a phospho sulfurized hydrocarbon compound.

63. (New) The lubricating oil comp additive of Claim 62, wherein the succinimide compound is boron-free.

64. (New) The lubricating oil additive of Claim 63, wherein the boron-free succinimide compound is represented by the formula (I):



wherein

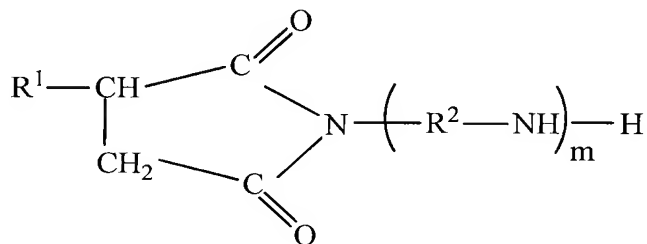
R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

65. (New) The lubricating oil additive of Claim 62, wherein the succinimide compound contains boron.

66. (New) The lubricating oil additive of Claim 65, wherein the succinimide compound is a compound of the formula (I)



which contains boron,

wherein

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R^1 is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

67. (New) The lubricating oil additive of Claim 62, wherein the phospho sulfurized hydrocarbon compound has a structure in which two alkyl groups are bonded to a phosphorous atom.

68. (New) The lubricating oil additive of Claim 62, wherein the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and a phosphorous sulfide.

69. (New) The lubricating oil additive of Claim 68, wherein the olefin is propylene, butylene, isobutylene, decene, cetene, octadecene, a terpene, vinylnorbornene or camphene.

70. (New) The lubricating oil additive of Claim 68, wherein the olefin is α -pinene.

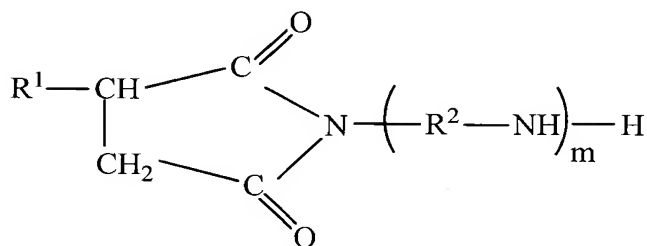
71. (New) The lubricating oil additive of Claim 68, wherein the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

72. (New) The lubricating oil additive of Claim 68, wherein the olefin is α -pinene and the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

73. (New) The lubricating oil additive of Claim 65, wherein the boron-containing succinimide compound is obtained by reacting a boron-free succinimide compound with a boron-containing compound.

74. (New) The lubricating oil additive of Claim 68, wherein
the boron-containing succinimide compound is obtained by reacting a boron-free
succinimide compound with a boron-containing compound,
the phospho sulfurized hydrocarbon compound is the reaction product of an olefin and
a phosphorous sulfide,
the olefin is a terpene, and
the phosphorous sulfide is P_2S_3 , P_2S_5 , P_4S_7 or P_4S_{10} .

75. (New) The lubricating oil additive of Claim 74, wherein the olefin is α -pinene
and the succinimide compound is represented by the formula (I):



which contains boron,

wherein

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms,

R¹ is an alkyl or an alkenyl group having 5 to 350 carbon atoms, and

m is an integer of 1 to 10.

76. (New) The lubricating oil additive of Claim 68, wherein the reaction product of a
succinimide compound and a phospho sulfurized hydrocarbon compound is obtained by
reacting the succinimide compound and the phospho sulfurized hydrocarbon compound at a
temperature of about 100°C to about 300°C.

77. (New) A lubricating oil composition comprising a mineral oil and/or a synthetic base oil and the lubricating oil additive of Claim 62.

78. (New) The lubricating oil composition of Claim 77, which comprises 0.01 to 50 % by mass of the lubricating oil additive.

79. (New) The lubricating oil composition of Claim 77, wherein the base oil has a kinematic viscosity at 100°C is 1 to 30 mm²/s.

80. (New) The lubricating oil composition of Claim 77, wherein the base oil has a %C_A of 20 % or less.